

What is claimed is:

1. A USB system for data communication between a processor and IDE devices, comprising:
a plurality of IDE devices;
a plurality of USB-to-IDE bridges, wherein each IDE device is connected to a respective USB-to-IDE bridge; and
a USB controller, wherein the USB-to-IDE bridges are connected to the USB controller, whereby the processor can communicate with the IDE devices via the USB controller.

2. The system of claim 1, wherein at least one of the IDE devices comprises a hard disk drive.

3. The system of claim 1, further comprising one or more USB hubs, each USB hub connected between two or more USB-to-IDE bridges and a USB controller.

4. The system of claim 1, wherein each IDE device can be utilized in hot plugging.

5. The system of claim 1, wherein one or more IDE devices can be disconnected from the system while the system is operating.

6. The system of claim 1, wherein at least one additional IDE device coupled to a corresponding USB-to-IDE bridge can be connected to the USB controller while the system is operating.

7. The system of claim 1, further comprising at least one USB hub connected between a number of the USB-to-IDE bridges and one of the USB

1 controllers, whereby the processor can communicate with the IDE devices via the
2 USB controller and the USB hub.

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4 8. The system of claim 7, wherein one or more IDE devices can be
5 disconnected from the system while the system is operating.

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7 9. The system of claim 1, wherein at least one additional IDE device
8 coupled to a corresponding USB-to-IDE bridge can be connected to the hub
9 while the system is operating.

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11 10. A method for connecting multiple IDE devices to a processor for
12 data communication, comprising the steps of:

13 providing multiple USB-to-IDE bridges;

14 connecting each IDE device to a respective one of the USB-to-IDE
15 bridges;

16 providing a USB controller; and

17 connecting the USB-to-IDE bridges to the USB controller, whereby the
18 processor can communicate with the IDE devices via the USB controller.

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20 11. The method of claim 10, wherein at least one of the IDE devices
21 comprises a disk drive.

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23 12. The method of claim 10, further comprising the steps of hot
24 plugging one or more IDE devices to the USB-to-IDE bridges.

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26 13. The method of claim 10, further comprising the steps of
27 disconnecting one or more of the IDE devices from the system while the system
28 is operating.

1 14. The method of claim 10, further comprising the steps of connecting
2 at least one additional IDE device coupled to a corresponding USB-to-IDE
3 bridge, to the USB controller while the system is operating.

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5 15. The method of claim 10, further comprising the steps of:
6 providing at least one USB hub;
7 connecting each hub to a USB controller; and
8 connecting two or more USB-to-IDE controllers to each hub, such that
9 each hub is connected between a USB controller and two or more USB-to-IDE
10 controllers.

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12 16. The method of claim 15, further comprising the steps of
13 disconnecting one or more of the IDE devices from the system while the system
14 is operating.

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16 17. The method of claim 15, further comprising the steps of connecting
17 at least one additional IDE device coupled to a corresponding USB-to-IDE
18 bridge, to one of the hubs while the system is operating.

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20 18. A data storage system, comprising:
21 a plurality of IDE storage devices;
22 a plurality of USB-to-IDE bridges, wherein each IDE storage device
23 is connected to a respective USB-to-IDE bridge; and
24 a USB controller, wherein the USB-to-IDE bridges are connected to
25 the USB controller, whereby the processor can communicate with the IDE
26 storage devices via the USB controller.

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28 19. The data storage system of claim 18, further comprising a carrier
29 for each IDE data storage device, such that each IDE disk drive and
30 corresponding USB-to-IDE bridge are stored in the respective carrier.

1 20. The data storage system of claim 18, wherein one or more IDE
2 storage devices can be disconnected from the system while the system is
3 operating.

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5 21. The data storage system of claim 18, wherein at least one
6 additional IDE disk device coupled to a corresponding USB-to-IDE bridge can be
7 connected to the USB controller while the system is operating.

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9 22. The data storage system of claim 18, further comprising at least
10 one USB hub connected between a number of the USB-to-IDE bridges and one
11 of the USB controllers, whereby the processor can communicate with the IDE
12 devices via the USB controller and the USB hub.

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14 23. The data storage system of claim 18, further comprising one or
15 more USB hubs, each USB hub connected between two or more USB-to-IDE
16 bridges and a USB controller.

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18 24. The data storage system of claim 23, wherein at least one or more
19 IDE storage devices can be disconnected from the system while the system is
20 operating.

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22 25. The data storage system of claim 23, wherein at least one
23 additional IDE storage device coupled to a corresponding USB-to-IDE bridge
24 can be connected to one of the USB hubs while the system is operating.

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26 26. The data storage system of claim 23, wherein at least one
27 additional IDE storage device coupled to a corresponding USB-to-IDE bridge and
28 associated hub, can be connected to the USB controller while the system is
29 operating.

1 27. The data storage system of claim 23, wherein at least one IDE
2 storage device coupled to a corresponding USB-to-IDE bridge and associated
3 hub, can be disconnected to the USB controller while the system is operating.

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